



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

August 31, 2015

Vice President, Operations  
Entergy Operations, Inc.  
Grand Gulf Nuclear Station  
P.O. Box 756  
Port Gibson, MS 39150

SUBJECT: GRAND GULF NUCLEAR STATION, UNIT 1 - ISSUANCE OF AMENDMENT  
RE: REVISION TO TECHNICAL SPECIFICATION 5.6.5.b TO ADD  
REFERENCE NEDC-33075P-A, GE HITACHI BOILING WATER REACTOR  
DETECT AND SUPPRESS SOLUTION – CONFIRMATION DENSITY  
(TAC NO. MF5500)

Dear Sir or Madam:

The U.S. Nuclear Regulatory Commission (NRC, the Commission) has issued the enclosed Amendment No. to Facility Operating License No. NPF-29 for the Grand Gulf Nuclear Station, Unit 1 (GGNS). This amendment consists of a change to the technical specifications (TS) in response to your application dated January 6, 2015, as supplemented by letter dated March 27, 2015.

The amendment modifies the GGNS TS 5.6.5.b, "Core Operating Limits Report (COLR)," by adding the reference "NEDC-33075P-A, Revision 8, GE [General Electric] Hitachi Boiling Water Reactor Detect and Suppress Solution – Confirmation Density [DSS-CD]," as Reference 27. The amendment was submitted in support of the NRC's approval of the Maximum Extended Load Line Limit Analysis Plus amendment.

A copy the related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,

A handwritten signature in black ink that reads "Alan Wang".

Alan B. Wang, Project Manager  
Plant Licensing IV-2 and Decommissioning  
Transition Branch  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-416

Enclosures:

1. Amendment No. to NPF-29
  2. Safety Evaluation
- cc w/encls: Distribution via Listserv



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

ENTERGY OPERATIONS, INC.

SYSTEM ENERGY RESOURCES, INC.

SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION

ENTERGY MISSISSIPPI, INC.

DOCKET NO. 50-416

GRAND GULF NUCLEAR STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 206  
License No. NPF-29

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Entergy Operations, Inc. (the licensee), dated January 6, 2015, as supplemented by letter dated March 27, 2015, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

Enclosure 1

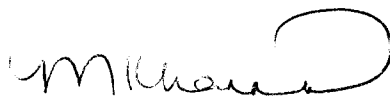
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-29 is hereby amended to read as follows:

- (2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. \_\_\_\_\_ are hereby incorporated in the license. Entergy Operations, Inc. shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 180 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Meena K. Khanna, Chief  
Plant Licensing IV-2 and Decommissioning  
Transition Branch  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Facility Operating  
License No. NPF-29 and the  
Technical Specifications

Date of Issuance: August 31, 2015

ATTACHMENT TO LICENSE AMENDMENT NO. 206

FACILITY OPERATING LICENSE NO. NPF-29

DOCKET NO. 50-416

Replace the following pages of the Facility Operating License No. NPF-29 and the Appendix A, Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Facility Operating License

<u>Remove</u>	<u>Insert</u>
4	4

Technical Specifications

<u>Remove</u>	<u>Insert</u>
5.0-21	5.0-21

- (b) SERI is required to notify the NRC in writing prior to any change in (i) the terms or conditions of any new or existing sale or lease agreements executed as part of the above authorized financial transactions, (ii) the GGNS Unit 1 operating agreement, (iii) the existing property insurance coverage for GGNS Unit 1 that would materially alter the representations and conditions set forth in the Staff's Safety Evaluation Report dated December 19, 1988 attached to Amendment No. 54. In addition, SERI is required to notify the NRC of any action by a lessor or other successor in interest to SERI that may have an effect on the operation of the facility.

C. The license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

Entergy Operations, Inc. is authorized to operate the facility at reactor core power levels not in excess of 4408 megawatts thermal (100 percent power) in accordance with the conditions specified herein.

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 206 are hereby incorporated into this license. Entergy Operations, Inc. shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

During Cycle 19, GGNS will conduct monitoring of the Oscillation Power Range Monitor (OPRM). During this time, the OPRM Upscale function (Function 2.f of Technical Specification Table 3.3.1.1-1) will be disabled and operated in an "indicate only" mode and technical specification requirements will not apply to this function. During such time, Backup Stability Protection measures will be implemented via GGNS procedures to provide an alternate method to detect and suppress reactor core thermal hydraulic instability oscillations. Once monitoring has been successfully completed, the OPRM Upscale function will be enabled and technical specification requirements will be applied to the function; no further operating with this function in an "indicate only" mode will be conducted.

## 5.6 Reporting Requirements

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### 5.6.5 Core Operating Limits Report (COLR) (continued)

21. NEDE-33383-P, "GEXL97 Correlation Applicable to ATRIUM-10 Fuel," Global Nuclear Fuel.
  22. EMF-CC-074(P)(A), Volume 4, "BWR Stability Analysis Assessment of STAIF with Input from MICROBURN-B2", Siemens Power Corporation, Richland, WA.
  23. EMF-2292(P)(A), "ATRIUM-10 Appendix K Spray Heat Transfer Coefficients", Siemens Power Corporation, Richland, WA.
  24. NEDE-24011 -P-A, General Electric Standard Application for Reactor Fuel (GESTAR-II).
  25. NEDO-31960-A, "BWR Owners' Group Long-Term Stability Solutions Licensing Methodology"
  26. NEDO-32465-A, "Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology and Reload Applications"
  27. NEDC-33075P-A, Revision 8, "GE Hitachi Boiling Water Reactor Detection and Suppress Solution – Confirmation Density."
- c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.
  - d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 206 TO  
FACILITY OPERATING LICENSE NO. NPF-29  
ENTERGY OPERATIONS, INC., ET AL.  
GRAND GULF NUCLEAR STATION, UNIT 1  
DOCKET NO. 50-416

1.0 INTRODUCTION

By application dated January 6, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15006A238), as supplemented by letter dated March 27, 2015 (ADAMS Accession No. ML15089A126), Entergy Operations, Inc. (Entergy, the licensee), requested changes to the Technical Specifications (TS) for the Grand Gulf Nuclear Station, Unit 1 (GGNS).

The proposed changes would revise the GGNS TS 5.6.5.b, "Core Operating Limits Report (COLR)," to add Topical Report (TR) "NEDC-33075P-A, Revision 8, GE [General Electric] Boiling Water Reactor Detect and Suppress Solution – Confirmation Density [DSS-CD]" as Reference 27. The amendment was submitted in support of the U.S. Nuclear Regulatory Commission's (NRC's) approval of the Maximum Extended Load Line Limit Analysis Plus (MELLLA+) amendment.

2.0 REGULATORY EVALUATION

Reactor physics parameters are controlled to assure conformance to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.36, "Technical specifications," by specifying the specific value(s) determined to be within specified acceptance criteria (usually the limits of the safety analyses) using an approved calculation methodology. Generic Letter (GL) 88-16, "Removal of Cycle-Specific Parameter Limits from Technical Specifications," dated October 1988, allowed an alternative for controlling the values of cycle-specific parameters to assure conformance to 10 CFR 50.36, which calls for specifying the lowest functional performance levels acceptable for continued staff operation, by specifying the calculation methodology and acceptance criteria. This permits operation at any specific value determined by the licensee, using the specified methodology, to be within the acceptance criteria. The COLR documents the specific value of parameter limits resulting from the licensee's calculations, including any mid-cycle revisions to such parameter values.

The use of the COLR to include the values of cycle-specific parameter limits in individual specifications includes: (1) the addition of a new defined term for the formal report that provides the cycle-specific parameter limits, (2) the addition of its associated reporting requirement to the Administrative Controls section of the TSs, and (3) the modification of individual specifications to replace these limits with a reference to the defined formal report for the values of these limits. With this alternative, reload license amendments, for the sole purpose of updating cycle-specific parameter limits, will be unnecessary. The licensee is proposing to add TR NEDC-33075P-A, Revision 8, as a new reference for use in future COLR reload analyses.

### 3.0 TECHNICAL EVALUATION

#### 3.1 Background

By letter dated January 21, 1993 (ADAMS Accession No. ML021480359), the NRC issued Amendment No. 106, approving the adoption of GL 88-16 for the removal of cycle specific parameters in the GGNS TSs. By letter dated August 31, 2015, the NRC issued Amendment No. 205, approving a revision to the GGNS TSs to allow plant operation from the current licensed Maximum Extended Load Line Limit Analysis (MELLLA) to the MELLLA+ domain, under the previously approved extended power uprate condition of 4408 megawatts thermal rated core thermal power. As required by the MELLLA+ TR NEDC-33006P-A, Revision 3, "General Electric Boiling Water Reactor Maximum Extended Load Line Limit Analysis Plus," dated June 2009 (ADAMS Accession No. ML091800530), the licensee implemented the DSS-CD stability solution (NEDC-33075P, Revision 7) for operation in the MELLLA+ domain. During the MELLLA+ review, TR NEDC-33075P, Revision 7, was approved by the NRC staff by letter dated November 14, 2013 (ADAMS Accession No. ML13267A467). Subsequently, by letter dated February 28, 2014 (ADAMS Accession No. ML14024A111), the NRC issued TR NEDC-33075P-A, Revision 8, as an approved licensing TR. As such, the NRC staff used Revision 8 for the GGNS MELLLA+ review. Therefore, the NRC staff requested Entergy to update the GGNS COLR references to reflect the latest revision of NEDC-33075P-A for future COLR reload reviews.

#### 3.2 Addition of NEDC-33075P-A, Revision 8

As part of the MELLLA+ review, the NRC determined that the licensee had complied with the following limitations and conditions, listed in Section 5 of the TR NEDC-33075P-A Safety Evaluation Report (SER):

##### a. NRC Condition 1

NRC Condition 1 states:

The NRC staff previously reviewed and approved the implementation of DSS-CD using the approved GEH [GE-Hitachi] Option III hardware and software. The DSS-CD solution is not approved for use with non-GEH hardware. The hardware components required to implement DSS-CD are expected to be those currently used for the approved Option III. If the DSS-CD hardware implementation deviates from the approved Option III solution, a hardware review by the NRC staff will be required.



Implementations on other Option III platforms will require plant-specific reviews.

The licensee states that the DSS-CD will be implemented in the already approved GE Option III platform. Therefore, the licensee addressed and satisfied NRC Condition 1.

b. NRC Condition 2

NRC Condition 2 states, in part, that:

The CDA [confirmation density algorithm] setpoint calculation formula and the adjustable parameters values are defined in NEDC-33075P, Revision 7 [ADAMS Package Accession No. ML111610593]. Deviation from the stated values or calculation formulas is not allowed without NRC review. To this end, the subject TR, when approved and implemented by a licensed nuclear power plant, must be referenced in the plant TSs, so that these values become controlled and part of the licensing bases.

The licensee states that the DSS-CD Confirmation Density Algorithm setpoint calculation followed the procedure outlined in the DSS-CD TR NEDC-33075P-A (ADAMS Accession No. ML14024A111). Therefore, the licensee addressed and satisfied NRC Condition 2.

c. NRC Condition 3

NRC Condition 3 states, in part, that:

The NRC staff previously concluded that the plant-specific settings for eight of the FIXED parameters and three of the ADJUSTABLE parameters, as stated in section 3.6.3 of the NRC staff's SE for NEDC 33075P, Revision 5 [ADAMS Package Accession No. ML080310384], are licensing basis values. The process by which these values will be controlled must be addressed by licensees.

The licensee states that the values of the FIXED and ADJUSTABLE parameters are established by GEH and will be documented in a DSS-CD Settings Report. Therefore, the licensee addressed and satisfied NRC Condition 3.

d. NRC Condition 4

NRC Condition 4 states that:

If plants other than Brunswick Steam Electric Plant, Units 1 and 2, use the DSS-CD trip function, those plant licensees must ensure the DSS-CD trip function is applicable in their plant licensing basis, including the optional BSP [backup stability protection] trip function, if it is to be installed.

The DDS-CD trip function and BSP trip function are applicable to the GGNS licensing basis. The DSS-CD was evaluated for applicability at GGNS and found that no "transportability issues"

existed because GGNS uses the standard NUMAC PRM system. Therefore, the licensee addressed and satisfied NRC Condition 4.

In addition, Section 8.0, "Effect of Technical Specifications," of NEDC-33075P-A, Revision 8, required several TS changes for the implementation of the DSS-CD stability solution. These TS changes were reviewed and approved as part of the MELLLA+ amendment. Therefore, as part of the MELLLA+ review, Entergy has demonstrated that NEDC-33075P-A, Revision 8, can be used as an approved methodology at GGNS.

### 3.3 NRC Staff Conclusion

As explained above, the NRC has previously determined that NEDC-33075P-A, Revision 8, is applicable to GGNS and the licensee has complied with the NRC conditions of the TR NEDC-33075P-A Safety Evaluation as addressed above. Therefore, the NRC staff concludes that the addition of TR NEDC-33075P-A, Revision 8, as Reference 27, to TS 5.6.5.b, is an administrative change and, thus, is acceptable.

### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Mississippi State official was notified of the proposed issuance of the amendment. The State official had no comments.

### 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area, as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding published in the *Federal Register* on April 28, 2015 (80 FR 23604). Accordingly, the amendment meets the eligibility criteria for categorical exclusion, set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

### 6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: Taylor Lamb  
Alan Wang

Date: August 31, 2015

August 31, 2015

Vice President, Operations  
Entergy Operations, Inc.  
Grand Gulf Nuclear Station  
P.O. Box 756  
Port Gibson, MS 39150

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RE: REVISION TO TECHNICAL SPECIFICATION 5.6.5.b TO ADD  
REFERENCE NEDC-33075P-A, GE HITACHI BOILING WATER REACTOR  
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(TAC NO. MF5500)**

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Sincerely,

*/RA/*

Alan B. Wang, Project Manager  
Plant Licensing IV-2 and Decommissioning  
Transition Branch  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-416

Enclosures:

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- 2. Safety Evaluation

cc w/encls: Distribution via Listserv

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RidsNrrDssSrxb Resource TLamb, NRR

**ADAMS Accession No.: ML15180A170**

OFFICE	NRR/DORL/LPL1-2/PM	NRR/DORL/LPL4-2/PM	NRR/DORL/LPL4-2/LA	NRR/DSS/STSB/BC
NAME	TLamb	AWang	PBlechman	RElliot
DATE	7/15/14	7/15/15	7/15/15	7/30/15
OFFICE	NRR/DSS/SRXB/BC	OGC	NRR/DORL/LPL4-2/BC	NRR/DORL/LPL4-2/PM
NAME	CJackson	JWachutks	MKhanna	AWang
DATE	8/4/15	8/11/15	8/31/15	8/31/15